INDOOR AIR

Ray Cody (Region 1) led a discussion on soil and ground-water contamination to indoor air. He remarked that this is a complicated and elusive topic that is often driven as much by policy as it is by technical issues. Ray discussed a soil vapor sampling equation and related guidance that he distributed to forum members prior to the call. He developed this equation in conjunction with a professor at Rensselaer Polytechnic Institute. The equation helps to understand whether and how soil vapor could be useful in characterizing indoor air at a given site. The equation indicates the depth at which an RPM can expect to achieve a VOC concentration equivalent to the expected PQL, and tells which sampling technologies are the most appropriate in order to achieve the objective. Because the guidance is a screening tool that has not yet been peer reviewed, Ray would be happy to provide technical input to anyone using the equation to ensure its application is consistent with its boundaries and assumptions. Ray can be reached by telephone at (617) 918-1366 or via email at cody.ray@epa.gov.

In RCRA Corrective Action, environmental indicators (EIs) ensure that sites are protective of human health for current use. They serve as a way station to a final remedy. Indoor air may be a substantial and pervasive pathway from a risk standpoint. The Indoor Air workgroup grew out of a series of meetings focusing on EIs. Ray provided a link to the August 2000 Environmental Indicator forum proceedings:

http://www.clu-in.org/eiforum2000/

Pressure, volume, and temperature become critical when looking at indoor air. Indoor air sampling is also prone to extreme bias, resulting in many false positives and negatives. Sampling and analytical methodologies needs to be more exacting when dealing with indoor air. Investigators need a toolkit of techniques that they can rely on to determine the best method for a particular site. As brownfields redevelopment becomes increasingly common, indoor air pathway issues will become more of a concern.

EPA has several experts on indoor air, any of whom may be contacted for more information. Dom Digiulio (ORD/Ada), Ronald Mosley (ORD/Ada), and Henry Schuver (OSW) are all excellent points of contact for indoor air questions.

Vince Mallot (Region 6) asked Ray how one knows when a technique fails. Ray said that you must rely upon your knowledge of the site and take into consideration every possibility. You must also check your calculations and make sure the results make sense given the nature of the site. You must correlate your PQL with either a specific risk-based concentration or emerging numerical criteria.

Jim Harrington (NYSDEC) asked if anyone has validated the calculations in the equation. Ray said that this has not been done yet, but the equation is based on physical and chemical principles. When dealing with smear zones, soil concentrations, and NAPL, you need to substitute vapor pressure for Henry's Law. The equation should only be used as a screening tool. Jim Harrington suggested that Ray highlight the caveats to the equation in the beginning of the guidance document instead of placing them in the question and answer section. Ed Mead suggested that the guidance mention that the equation assumes no retardation and that the variables are in equilibrium. Vince Mallot said that he would like to send this equation to the Ground Water Forum for review. Ray will send the equation and related guidance to Vince. Any Forum members with additional comments on the equation should send them to Ray.

Mark Granger (Region 2) mentioned a series of eight documents related to air modeling that were issued by Superfund's Air Office 10 years ago. Mark will send these documents to Ray.